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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,047	08/21/2003	Sampath Purushothaman	YOR920030029US2 (16841)	6546

23389 7590 05/14/2007

SCULLY SCOTT MURPHY & PRESSER, PC
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EXAMINER	
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ART UNIT	PAPER NUMBER
2822	

MAIL DATE	DELIVERY MODE
05/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/645,047	PURUSHOTHAMAN ET AL.	
	Examiner	Art Unit	
	David E. Graybill	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8-11 and 13-32* is/are pending in the application.

4a) Of the above claim(s) *19-32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-11 and 13-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 August 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1-11-7*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

The information disclosure statement filed 2-14-7 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The information disclosure statement has been placed in the application file, but the information referred to therein has not been considered.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claim 1 feature, "a first layer of silicon nitride entirely on said terminal layer" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if

only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: There is insufficient antecedent basis for the claimed subject matter "terminal layer."

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a

person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

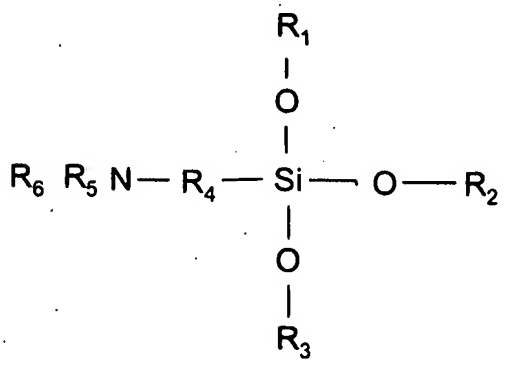
Claims 1-6, 8-11 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art and Van Andel (5287003).

In the instant specification, paragraphs 3-18, 39, 45, 48, 51-54, 56 and 60, applicant admits as prior art the following:

A structure for interconnecting semiconductor components comprising: a layered substrate 100 for transferring; said layered substrate is terminated with a terminal layer (portion of 103, on which, is bi-layer capping coating 200) that includes at least one metallic component; a bi-layer capping coating 200 on top of the layered substrate, each layer of said coating provides adhesion and protection; said bi-layer capping coating comprising a

first layer of an amino silane entirely on said terminal layer including said at least one metallic component and a second layer of an amino silane atop said first layer of amino silane; and a carrier assembly 300, 400, 500; wherein said substrate to be transferred contains at least one semiconductor component; wherein said at least one semiconducting component is selected from the group consisting of semiconductor devices, semiconductor circuits, thin-film layers, passive and/or active elements, interconnecting elements, memory elements, micro-electro-mechanical elements, optical elements, optoelectronic elements, and photonic elements; wherein said carrier assembly comprises a carrier wafer 500, an adhesive layer 400 and an intermediate layer 300; wherein said carrier assembly comprises glass and an intermediate layer of polyimide; wherein said carrier wafer is selected from the group consisting of silicon, silicon-on-insulator, silicon germanium-on-insulator, alumina, quartz, Group III-V or II-VI semiconductor wafers, and ceramics; wherein said metallic component is a patterned wiring level or a blanket film; wherein said metallic component is selected from the group consisting Ti, Ta, Zr, Hf, their silicides nitrides and their conducting siliconitrides; Cu, Al, composites of these materials with glass; and combinations thereof; wherein said capping coating provides passivation to the metallic component; wherein said capping coating comprises: a first layer that serves as a diffusion barrier, while providing adhesion to the

substrate; and a second layer that is capable of providing adhesion to the carrier assembly and is an additional diffusion limiting layer; wherein said second layer comprises an amino silane and is an adhesion promoter to an intermediate layer 300; wherein said amino silane is a compound of the formula:



wherein R1, Ra, R3, R5 and m are, independently of each other, hydrogen, a lower alkyl radical containing from 1 to about 6 carbon atoms, an acyl radical containing 1 to 6 carbon atoms, or an allyl, alkylene or alkynyl radical containing 2 to 6 carbon atoms, and m is a lower alkyl containing from 1 to 6 carbon atoms or an aromatic system; wherein said polyimide material is selected from the group consisting of polyamic acid (PAA)-based polyimides, polyimic ester-based polyimides, and pre-imidized polyimides; wherein said carrier substrate comprises glass and intermediate layer of polyimide to allow for a further release process; wherein said first layer inherently further

serves as protection (at least via adhesion and as a physical barrier) against a removal process of said carrier assembly.

To further clarify, in addition to admitting as prior art the bi-layer capping coating 200 entirely on the portion of 103, on which, is the capping coating, applicant also admits as prior art the bi-layer capping coating entirely on the terminal layer "spun," also see 5081005, 5194928 and Perfecto. In any case, applicant's admitted prior art and the invention are identically disclosed, including in the drawings, except that the prior art "capping layer 200 in this scheme [the invention] is substituted by a capping layer 200'," and there is no original disclosure of the claimed capping coating entirely on the terminal layer additive to that of the admitted prior art. Therefore, any original disclosure for the claimed capping layer entirely on the terminal layer also constitutes original disclosure for the admitted prior art capping layer entirely on the terminal layer.

To further clarify, applicant admits as prior art a bi-layer capping coating comprising a first layer of an amino silane entirely on said terminal layer including said at least one metallic component and a second layer of an amino silane atop said first layer of amino silane because applicant admits as prior art an amino silane capping coating having "a few monolayers." Furthermore, as cited, applicant discloses as prior art "a capping layer," and it is well settled that the term "a" or "an" ordinarily means "one or more."

Tate Access Floors, Inc., and Tate Access Floors Leasing, Inc., v. Interface Architectural Resources, Inc., 279 F.3d 1357; 2002 U.S. App. LEXIS 1924; 61 U.S.P.Q.2D (BNA) 1647 ((citing Tate Access Floors, Inc. v. Maxcess Techs., Inc, 222 F.3d 958, 966 n.4, 55 U.S.P.Q.2D (BNA) 1513, 1518 [**32] (citing Elkay Mfg. Co. v. Ebco Mfg. Co., 192 F.3d 973, 977, 52 U.S.P.Q.2D (BNA) 1109, 1112 (Fed. Cir. 1999))). "This court has repeatedly emphasized that an indefinite article 'a' or 'an' in patent parlance carries the meaning of 'one or more' in open-ended claims containing the transitional phrase 'comprising.' Unless the claim is specific as to the number of elements, the article 'a' receives a singular interpretation only in rare circumstances when the patentee evinces a clear intent to so limit the article." (Citations omitted). Scanner Technologies v./COS Vision Systems, 365 F.3d 1299, 1304 (Fed. Cir. 2004).

However, applicant does not appear to explicitly admit as prior art wherein said bi-layer capping coating comprising a first layer of silicon nitride entirely on said terminal layer, and said first layer protects from an oxygen-based plasma removal process.

Nonetheless, at column 3, line 51 to column 6, line 3, Van Andel discloses wherein a bi-layer capping coating layer 20 comprises "silicon nitride" entirely on a terminal layer including at least one metallic component 18 (at least before "the underlying photoresist is etched") and a

second layer of an amino silane "aminosilane" atop a first layer of silicon nitride, and said first layer protects from an oxygen-based plasma removal process.

Moreover, it would have been obvious to combine this disclosure of Van Andel with applicant's admitted prior art by substituting the bi-layer capping coating 20 of Van Andel for the capping coating 103 of applicant's admitted prior art, because, as disclosed by Van Andel as cited, it would desirably passivate the semiconductor component of the admitted prior art.

Furthermore, applicant's capping coating 103 and the bi-layer capping coating 20 of Van Andel are alternatives and equivalents; therefore, as reasoned from well established legal precedent, it would have been obvious to substitute or combine the coating 20 of Van Andel for or with the coating 103 of applicant's admitted prior art. See In re May (CCPA) 136 USPQ 208 (It is our opinion that the substitution of Wille's type seal for the cement of Hallauer in Figure 1 would be obvious to persons of ordinary skill in the art from the disclosures of these references, merely involving an obvious selection between known alternatives in the art and the application of routine technical skills.); In re Cornish (CCPA) 125 USPQ 413; In re Soucy (CCPA) 153 USPQ 816; Sabel et al. v. The Wickes Corporation et al. (DC SC) 175 USPQ 3; Ex parte Seiko Koko Kabushiki Kaisha Co. (BdPatApp&Int) 225 USPQ 1260; and Ex parte Rachlin (BdPatApp&Int) 151 USPQ 56. See also

Smith v. Hayashi, 209 USPQ 754 (Bd. of Pat. Inter. 1980) (However, there was evidence that both phthalocyanine and selenium were known photoconductors in the art of electrophotography. "This, in our view, presents strong evidence of obviousness in substituting one for the other in an electrophotographic environment as a photoconductor." 209 USPQ at 759.). An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) (citations omitted). "For example, where a claimed apparatus requiring Phillips head screws differs from a prior art apparatus describing the use of flathead screws, it might be hard to find motivation to substitute flathead screws with Phillips head screws to arrive at the claimed invention. However, the prior art would make it more than clear that Phillips head screws and flathead screws are viable alternatives serving the same purpose. Hence, the prior art would 'suggest' substitution of flathead screws for Phillips head screws albeit the prior art might not 'motivate' use of

Phillips head screws in place of flathead screws. Ex parte Jones, 62 USPQ2d 1206 (BdPatApp&Int 2001). See also In re Crockett, 279 F.2d 274, 126 USPQ 186 (CCPA 1960); Ex parte Quadranti, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

Moreover, because applicant's admitted prior art amino silane layer 200 is entirely over the terminal layer, even without relying on Van Andel for the disclosure of the silicon nitride **entirely** on the terminal layer, the direct substitution of the bi-layer capping coating 20 of Van Andel for the admitted prior art amino silane layer entirely on the terminal layer would provide a first layer of silicon nitride entirely on the terminal layer.

Claims 1-6, 8-11 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art and Ponjée (0251347).

Applicant's admitted prior art is applied as applied supra.

However, applicant does not appear to explicitly admit as prior art wherein said bi-layer capping coating comprising a first layer of silicon nitride entirely on said terminal layer, and said first layer protects from an oxygen-based plasma removal process.

Nonetheless, at column 1, lines 1-29; and column 3, line 36 to column 5, line 50, Ponjée discloses wherein a bi-layer capping coating layer comprises silicon nitride 3 entirely on a terminal layer including at least one

metallic component 2 (at least before "a photosensitive polyamide is then provided") and a second layer of an amino silane 6 atop said first layer of silicon nitride, and said first layer inherently protects from an oxygen-based plasma removal process.

Moreover, it would have been obvious to combine this disclosure of Ponjée with applicant's admitted prior art by substituting the bi-layer capping coating 3, 6 of Ponjée for the capping coating 103 of applicant's admitted prior art, because, as disclosed by Ponjée as cited, it would desirably passivate the semiconductor component of the admitted prior art. To further clarify, because applicant's admitted prior art amino silane layer 200 is entirely over the terminal layer, the substitution of the bi-layer capping coating 3, 6 for the prior art amino silane layer, would provide a first layer of silicon nitride entirely on said terminal layer.

Furthermore, applicant's capping coating 103 and the bi-layer capping coating 20 of Ponjée are alternatives and equivalents; therefore, as reasoned from well established legal precedent, it would have been obvious to substitute or combine the coating 20 of Ponjée for or with the coating 103 of applicant's admitted prior art. See In re May (CCPA) 136 USPQ 208 (It is our opinion that the substitution of Wille's type seal for the cement of Hallauer in Figure 1 would be obvious to persons of ordinary skill in the art from the disclosures of these references, merely involving an obvious

selection between known alternatives in the art and the application of routine technical skills.); In re Cornish (CCPA) 125 USPQ 413; In re Soucy (CCPA) 153 USPQ 816; Sabel et al. v. The Wickes Corporation et al. (DC SC) 175 USPQ 3; Ex parte Seiko Koko Kabushiki Kaisha Co. (BdPatApp&Int) 225 USPQ 1260; and Ex parte Rachlin (BdPatApp&Int) 151 USPQ 56. See also Smith v. Hayashi, 209 USPQ 754 (Bd. of Pat. Inter. 1980) (However, there was evidence that both phthalocyanine and selenium were known photoconductors in the art of electrophotography. "This, in our view, presents strong evidence of obviousness in substituting one for the other in an electrophotographic environment as a photoconductor." 209 USPQ at 759.). An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) (citations omitted). "For example, where a claimed apparatus requiring Phillips head screws differs from a prior art apparatus describing the use of flathead screws, it might be hard to find motivation to substitute flathead

screws with Phillips head screws to arrive at the claimed invention. However, the prior art would make it more than clear that Phillips head screws and flathead screws are viable alternatives serving the same purpose. Hence, the prior art would 'suggest' substitution of flathead screws for Phillips head screws albeit the prior art might not 'motivate' use of Phillips head screws in place of flathead screws. Ex parte Jones, 62 USPQ2d 1206 (BdPatApp&Int 2001). See also In re Crockett, 279 F.2d 274, 126 USPQ 186 (CCPA 1960); Ex parte Quadranti, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

Moreover, because applicant's admitted prior art amino silane layer 200 is entirely over the terminal layer, even without relying on Ponjée for the disclosure of the silicon nitride **entirely** on the terminal layer, the direct substitution of the bi-layer capping coating 20 of Ponjée for the admitted prior art amino silane layer entirely on the terminal layer would provide a first layer of silicon nitride entirely on the terminal layer.

Applicant's remarks filed 7-24-6 have been fully considered and are adequately treated supra.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a

first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

For information on the status of this application applicant should check PAIR: Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alternatively, applicant may contact the File Information Unit at (703) 308-2733. Telephone status inquiries should not be directed to the examiner. See MPEP 1730VIC, MPEP 203.08 and MPEP 102.

Any other telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.
The fax phone number for group 2800 is (571) 273-8300.

David E. Graybill
Primary Examiner
Art Unit 2822

D.G.
9-May-07